Statement of
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Airline Passenger Baggage Screening: Technology and Airport Deployment

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Thank you Chairman Mica, Congressman Costello and Members of the Committee for this opportunity to discuss the status and future of checked baggage screening at our nation's airports. This is our third testimony before Congress on this important issue, the second before this Committee.

I will share GE Security's perspectives on the current deployment of Explosive Detection Systems (EDS), and how technology available today needs to be more widely deployed to increase the efficiency and quality of air travel in the U.S. and abroad while significantly increasing security. Finally, I will discuss the need for leadership and vision to spur the research and development that will result in technology advances and enhancements in both security and productivity.

Background

InVision Technologies, Inc. developed the first technology to be ultimately certified as an EDS in 1994. GE acquired InVision a decade later as a major part of GE's commitment to becoming a leading provider of security solutions. A family of GE Security explosive detection products has been developed to meet the variety of needs at different size airports. This includes five, certified checked baggage EDS products using two types of x-ray technology.

In addition to checked baggage EDS, GE trace detection portals and electronic trace detection (ETD) systems are deployed at airports and other facilities worldwide to detect explosives on people, their belongings and cargo. GE also provides cargo container security systems, access control, video security, biological detection, nuclear and radiological detection, as well as the integration of security systems, products and services to the public and the private sectors.

Checked Baggage Screening Today

On a recent flight at Washington Dulles International Airport, the pilot made an interesting announcement. He told the passengers that they would not be able to enjoy an on-time departure because 3000 bags needed to be loaded onto waiting aircraft -- one of which was theirs. The primary reason for frequent checked baggage processing issues at Dulles is the bottleneck caused by the security screening process. Bags are loaded and unloaded manually. Poor environmental conditions in the screening areas impact machine reliability. The lack of an automated checked baggage screening systems impacts airports around the country. Dulles is just one busy airport experiencing bag screening challenges that exemplify what almost inevitably occurs without an inline EDS system.

The problem at Dulles was first brought to public attention last year in a July 5th Washington Post article. In the article, a spokesman for Lufthansa said afternoon flights to Munich and Frankfurt are often delayed as much as an hour because of the limited number of luggage screening machines:

> "Unfortunately, it's not uncommon to have a 45-minute to one hour delay. We are deeply concerned. The worst thing is we experienced a lot of this last year, and it's unfortunate we didn't get some lessons learned from last summer."

Passenger convenience is not the only consideration. Such inefficient operations are costly on many levels and to many parties, including high labor costs

associated with manual processes, expensive flight delays and mishandled baggage.

U.S. taxpayers foot the bill year after year for excessive labor-related expenses. Without an inline EDS system for screening checked baggage, TSA must pay for extra staff to operate the stand-alone EDS and ETD machines, manually load and unload the bags for screening and manually transfer bags to and from threat resolution areas.

The escalating labor cost also includes an alarming rate of injuries and related workmen's compensation claims, the highest in the federal government. We believe that automating bag handling with inline EDS systems would dramatically decrease the injuries and costs associated with manual bag handling by Transportation Security Administration (TSA) employees. After an inline EDS screening system was installed at San Francisco International Airport, the TSA reported that injury claims were down 42%, and total cost of workmen's compensation went down 77%.

The taxpayer's bill also includes personnel expenses such as recruitment and training associated with high turnover rates, estimated by the TSA to be as high as 50% for part-time screeners.

The TSA has requested funding for past due workmen's compensation obligations and new retention programs in fiscal year 2007 to address the systemic staffing-related problems. The President's Budget Request includes $10 million for a Workforce Retention Program. $20 million in back payments are required to reimburse the Department of Labor for prior worker's compensation claims filed through fiscal year 2005. $55 million is budgeted in 2007 for workmen's compensation, which is an increase of $20 million over what was included in the final 2006 budget -- a 40% increase in just one year.

The airlines bear much of the burden. SITA published a report entitled Straightforward Baggage Management in March using data from the International Airline Trade Association, U.S. Department of Transportation DOT and other high level sources. The Report provides cost estimates associated with flight delays and other irregular operations.

A. Flight Delays - The average worldwide cost for delaying an aircraft is $50 per minute. The delay cost per minute for a 747 size aircraft is $760. The average one hour delay cited by Lufthansa for an international flight would cost approximately $45,000. Exacerbating the potential impact, widebody aircraft used on most international flights have a much higher chance of incurring baggage screening related delays because of the larger and heavier nature of the baggage typically carried by passengers on international trips.

B. Baggage Mishandling – When a bag does not make its intended flight, the airline incurs costs to track and deliver it directly to the passenger at their destination. The IATA/SITA WorldTracer service estimates the average cost per delayed bag at $100.

C. Manual Bag Handling – As the Post article notes, airlines are frequently asked to move bags from one screening machine to another when there is no automated bag handling system to manage this chore. Airlines and airports have also had to hire people to deal with the logistics related to the queuing of people and bags necessary since additional security measures were implemented following 9/11 because TSA does not manage the lines of people and bags prior to actual screening. The cost varies by airport, but we have heard estimates of as much as $1 million annually for airlines to move bags between machines at Dulles based on a reported average of between $700 and $1000 per day per airline.

These are just some examples of the costs incurred by airlines without even taking into account lost business due to the associated customer dissatisfaction.

Options for the Future of Airport Screening and Security

The future appears bleak if we continue to delay addressing the growing problem of maintaining critical security of our nation's aviation system while improving passenger and baggage screening. A means to fund efficient and effective methods of accomplishing that goal is needed now.

The Department of Transportation published the following statistics for 2005 versus 2004:

- Commercial air carrier domestic enplanements rose 6.6 percent
- International enplanements grew 12.1 percent

The growth trend continues in 2006. In April of this year, U.S. carriers had 51,704,368 enplanements - 9% growth over April of 2005.

The Federal Aviation Administration (FAA) projects average annual growth of U.S. passenger traffic at 3.1% between now and 2017 in its Aerospace Forecast Fiscal Years 2006-2017 Report. This may be conservative if economic pressures from sources such as escalating oil prices and the war in Iraq decrease. Even using their numbers, the 739 million enplanements in 2005 grow to 1 billion by 2015. At the industry average of 1.5 bags per enplaned passenger, the number of bags to be screened will climb from 1.1 to 1.5 billion. At this rate of growth, the system will be completely overwhelmed long before 2015 arrives.

A much better vision for the future of checked baggage screening and security for the transportation industry in general is possible with commitment to the goal of achieving a better and more secure tomorrow through advanced technology development and infrastructure investment.

There is little or no space for additional people or machines in airport lobbies. Automated, advanced technologies utilizing a combination of multiple sensors, called “sensor fusion”, as the primary means of achieving higher levels of security with less real estate and cost, is the answer.

How we implement EDS for checked baggage in U.S. aviation, will predict much about the future of all aviation and transportation security. The lesson and message evident today to those who may be willing and able to create innovative solutions is that interest and support wanes quickly after a security event occurs and media attention disappears.

Both in the future, and today, effective security is layered by design with interdependent, interconnected components. That interdependence was evident in an insightful comment made by the head of the Washington Task Force at a recent Chamber of Commerce Registered Traveler Symposium. He said that improving the checkpoint experience alone would not provide the predictable check-in time we seek for travelers. As processing efficiency and screening rates improve at passenger checkpoints, the time required to arrive in advance of a flight may still vary depending on checked baggage processing. Therefore, an automated, inline EDS checked baggage screening system has to be part of a comprehensive airport security solution.

Technology Development

Technology has progressed significantly in recent years and is poised to make great advances with proper support in the near future.

Since GE last testified before this committee in July of 2004, we have made a number of advancements in checked baggage screening technology. A number of software enhancements have been deployed which have markedly improved operational performance of the current generation of EDS machines.

We released the new CTX9400 that will enter into the operational testing phase upon completion of final TSA certification testing. The expected benefits include a 25% relative reduction in False Positives, a 50% reduction in Shield Alarms (the hardest and most expensive alarms to resolve as they must be handled through manual threat resolution in the bag inspection room) and improved EDS reliability. These improvements will result in lower operational cost and better overall processing throughput. The CTX9400 is available both as a new model and as an upgrade to existing equipment. It is not necessary to replace existing EDS to obtain these improvements – a critical consideration in a resource-constrained environment.

GE certified the Yxlon 3000 x-ray diffraction EDS in the U.S. This is the first actual next generation technology since it is not based on one previously certified and used historically for detection of explosives. The next phase of diffraction development is certification of the XRD. The XRD is a combination of a CTX 9000 series and Yxlon 3500 in a system-of-systems that is currently being certified in Israel and has undergone preliminary TSA certification tests. It is the first step in producing a fully automated system that replaces a labor-intensive threat resolution process with an automated one using diffraction-based technology. It is also an example of sensor fusion as both the CT and diffraction detection technologies work together.

GE developed ViewLink, which is a productivity and security enhancing upgrade to the smaller CTX2500 and CTX5500 EDS equipment. It networks the machines in a similar fashion as done with larger inline EDS systems but with a much simpler, and cheaper installation. It provides a reduction in headcount as well as a more effective threat resolution process since the operators know exactly where to search for suspect items. The bottom line benefit from ViewLink is increased security at a lower cost to taxpayers.

For the future, our technology roadmap lays out a continuous improvement plan for EDS technology. Each step in the plan is upgradeable to ensure that investments in this critical technology are not wasted.

We expect to release the CTX9800 in 2008. The CTX9800 substantially increases throughput with full volumetric, high-resolution 3D imaging and inspection. The alarm rate will also be lowered and reliability further improved. This product is also capable of sensor fusion by adding other detection technologies such as with diffraction on the XRD.

Broader leaps in EDS technology are being developed through the longer range Manhattan II Program run by the Department of Homeland Security's Science & Technology Directorate. GE also participates in this important R&D effort.

Along with the core product development, GE continues to upgrade its EDS networking systems to make them economically scaleable and fail-safe.

These future improvements will drive down cost while improving security and operational efficiency. Manufacturers typically fund at least two-thirds of research and development costs for technology. Without a commitment on the part of the federal government to protect the U.S. aviation and other transportation modes through technology development and implementation, there will be little incentive for manufacturers to continue to make such technology investments.

To fully realize the benefits of such innovations and to spur research in advanced security technology solutions, there must be a clearly articulated plan and a path from research to development to deployment. Technologies developed for aviation are not only portable to other transportation industries, but can be used to mitigate threats in other areas such as our borders, ports, government buildings, nuclear facilities, chemical plants, and iconic structures.

Summary

The future of checked baggage screening and other security technology depends on a willingness to invest now in a development path that leads to a highly effective, non-intrusive, networked system of sensors that is economically feasible. That future is in serious jeopardy due to a lack of support and the will to invest when there is no immediate criminal or terrorist event to focus attention and spur allocation of precious resources.

As air traffic grows, the throbbing headache we feel today will become a migraine. The pain will even be felt at smaller airports due to the hub and spoke transportation system structure. Eventually, another terrorist event or the crushing weight of an inefficient system will force action. Under those conditions, it is less likely to be one we all desire.

The options are to live with deploying whatever we have when the next event occurs, or to steadily work towards improving today's situation and tomorrow's future because we live in a world where the security threat is unlikely to diminish. A bleaker possibility is that the national capability to produce the necessary detection technology will have been temporarily lost, causing a delay in our ability to respond effectively at all.

We have experienced first-hand the devastating effects that inadequate security can bring. We recognize that increasing the effectiveness of security operations must be done in a cost-effective manner given the limited resources available – and GE is willing to work with the U.S. government and all stakeholders to increase security through effective and cost-saving technology.